

REMARKS

This Amendment is filed with an RCE and the requisite extension fees. Claims 1-8 are pending in the application with claims 1 and 8 being the independent claims.

Rejection Under 35 U.S.C. § 103

Wagner in view Sato or Yamazaki, and in further view of Kanekiyo

The Examiner rejected claim 1-8 under 35 U.S.C. § 103 as being unpatentable over U.S. Patent No. 6,177,129 to Wagner *et al.* in view of U.S. Patent No. 6,306,765 to Sato or U.S. Patent No. 5,976,259 to Yamazaki, and in further view of Kanekiyo. Claim 1 relates to a plasma processing apparatus having a bent wave guide, including a plurality of plasma processing units. Each plasma processing unit includes a vacuum processing chamber having a mounting stage for mounting a substrate with a fixed reference point. Each plasma processing unit also includes a wave guide bent at an angle for introducing high frequency waves into the vacuum processing chamber for converting process gas to plasma by high frequency waves and processing the substrate by the plasma. A common transfer chamber is airtightly connected to the plurality of plasma processing units and includes a transfer arm adapted to transfer the substrate to the mounting stage in a transfer direction that is fixed for each of the plurality of plasma processing units. The transfer arm is also adapted such that the reference point of the substrate is always positioned the same with respect to the transfer arm. For each of the plurality of plasma processing units, the position of the wave guide in relation to the transfer direction of the transfer arm is the same.

Claim 8 relates to a plasma processing method for performing a predetermined process for a substrate by a plasma processing apparatus having a bent wave guide. The apparatus comprises a plurality of plasma processing units, each having a vacuum

FINNEGAN
HENDERSON
FARABOW
GARRETT &
DUNNER LLP

1300 I Street, NW
Washington, DC 20005
202.408.4000
Fax 202.408.4400
www.finnegan.com

processing chamber including a mounting stage for mounting a substrate with a fixed reference point. The plasma processing unit also includes a wave guide bent at an angle for introducing high frequency waves into the vacuum processing chamber for converting process gas to plasma by high frequency waves and processing the substrate by the plasma. A common transfer chamber is airtightly connected to the plurality of plasma processing units and includes a transfer arm. The transfer arm transfers the substrate to the mounting stage in a transfer direction that is fixed for each of the plurality of plasma processing units. For each of the plasma processing units, the position of the wave guide in relation to the transfer direction of the transfer arm is the same. The method includes the steps of transferring the substrate with the reference point to the mounting stages of the plasma processing units from the transfer chamber. The reference of the substrate is positioned the same in each of the plasma processing units with respect to the wave guide. The method also includes the step of performing a plasma process for the substrate while the position of the reference point of the substrate in relation to the wave guide is kept the same for each of the plasma processing units.

Applicant has amended claims 1 and 8 to recite in the preambles that the claims are directed to processing apparatuses with bent wave guides. The invention is intended to solve problems that develop when using bent wave guides. Accordingly, the claims are now drawn toward processing apparatus having bent wave guides.

The art cited by the Examiner, alone or in combination, does not teach or suggest all the features of independent claims 1 and 8. Wagner teaches vacuum treatment stations for sequential treatment of semiconductor wafers. Several stations

43_a to 43_c are connected to a transport chamber 40 containing a transport robot 42. See Wagner, column 9, lines 15-19. The workpieces are transported between vacuum stations 43 in batch mode, that is, robot 42 picks up one workpiece batch B_T in one of the vacuum stations and supplies it to one of the others. See Wagner, column 9, lines 26-29; FIG. 4. In another embodiment, a transport chamber 70 includes a transfer robot 72 which can be extended or retracted. See Wagner column 11, lines 26-26 and 51-53; FIG. 6. However, as acknowledged by the Examiner, Wagner fails to teach or suggest any apparatus having all the claimed elements, including, inter alia, a waveguide.

Sato teaches a CVD apparatus 30 having first and second CVD devices 31, 41. See Sato, column 4, lines 66-67. CVD device 31 includes a plasma chamber 32 and a microwave guide 33 connected to the plasma chamber at the upper side. See Sato, column 3, lines 51-54.

Yamazaki teaches a plasma enhanced CVD system having a reaction chamber 1. A resonating space is formed above the reaction chamber as the inside space of a resonance chamber 2. Microwaves are radiated into the resonance space from a microwave oscillator 3 via an isolator 4 through a window made of synthetic quartz. See Yamazaki, column 2, lines 61-column 3, line 3.

A combination of Wagner, Sato, and Yamazaki does not disclose or suggest the claimed invention, including, for example, a bend in a microwave waveguide. The Examiner relies upon Kanekiyo for an asserted teaching that a bend is a standard configuration. See Office Action, page 6. Kanekiyo teaches a processing apparatus 10 having a waveguide 12a, 12b and a magnetron 13 as a microwave oscillating means.

See Kanekiyo, column 10, lines 11-14. The waveguide is bent. See Kanekiyo, FIGs. 3, 11.

In the Advisory Action, the Examiner stated that although the secondary references do not show wave guides having identical orientation with respect to the substrates, the orientation would not be "expected to change when one adds a conventional bend to the wave guide." The Examiner continued, arguing that "one of ordinary skill knows that these chambers each have their own magnetic and electrical fields associated with them, so one of competent workmanship would place them so that they have minimal interference with each other." Applicant traverses these statements, and respectfully requests that the Examiner provide evidence for these statements.

In contrast to the statement made by the Examiner, Applicant refers the Examiner to the background section of the present application, describing the state of the art. The background section describes that in order to minimize the footprint and reduce costs, current processing apparatuses have the configuration described in FIGs. 6 and 7. The Examiner's statements are unsupported and do not rise to a legal standard of obviousness.

The Examiner appears to be making an argument that the claimed bent wave guides, having the claimed configuration is inherent in the cited references. "To establish inherency, the extrinsic evidence must make clear that the missing descriptive matter is necessarily present in the thing described in the reference.... Inherency, however, may not be established by probabilities or possibilities." M.P.E.P. § 2112, *citing* In re Robertson, 169 F.3d 743, 745 (Fed. Cir. 1999). The references cited by the

FINNEGAN
HENDERSON
FARABOW
GARRETT &
DUNNER LLP

1300 I Street, NW
Washington, DC 20005
202.408.4000
Fax 202.408.4400
www.finnegan.com

Examiner do not “necessarily require” that wave guides, if they were shown, be configured as recited in claims 1 and 8. In fact, they could be configured as described in FIGs. 6 and 7 of the present application. The claimed wave guides are not taught or suggested by the cited references, and likewise, are not inherent.

To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference(s) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, not based on applicant’s disclosure. *In re Vaeck*, 947 F.2d 488 (Fed. Cir. 1991). See MPEP § 2143.

Using an applicant’s disclosure as a blueprint to reconstruct the claimed invention from isolated pieces of the prior art references contravenes the statutory mandate of § 103, which requires determining obviousness at the time the invention was made. See *Grain Processing Corp. v. American Maize-Prods. Co.*, 840 F.2d 902, 907, 5 U.S.P.Q.2d 1788, 1792 (Fed. Cir. 1988).

The combination of references applied by the Examiner fails to teach or suggest all the claim limitations. Claims 1 and 8 recite that “for each of said plurality of plasma processing units, the position of said wave guide in relation to said transfer direction of said transfer arm is the same.” None of the references teaches or suggests such a configuration. It is not inherent. It is not in the references. The Examiner’s reasoning in the Advisory Action does not establish the presence of these features in the cited

FINNEGAN
HENDERSON
FARABOW
GARRETT &
DUNNER LLP

1300 I Street, NW
Washington, DC 20005
202.408.4000
Fax 202.408.4400
www.finnegan.com

references. Unless the Examiner can provide prior art that supports her claim, the present claims are allowable over the cited art.

The combination of the cited references suggests nothing more than is discussed in the background section of the application, as set forth above. Accordingly, the Examiner has not established a *prima facie* case of obviousness. Claims 1 and 8 are allowable over this combination of references.

Claims 2-7 depend from and add additional features to independent claim 1. Accordingly, these claims are also allowable for at least the reasons set forth above. Applicant respectfully requests that the Examiner withdraw the rejection and allow these claims.

Wagner in view Sato or Yamazaki, and in further view of Kanekiyo, and further in view of Jeng *et al.* or Maydan *et al.* or Maher *et al.*

The Examiner also rejected claim 1-8 under 35 U.S.C. § 103 as unpatentable over Wagner in view of Sato or Yamazaki, and in further view of Kanekiyo, and further in view of U.S. Publication No. 2002/0084032 to Jeng *et al.* or U.S. Patent No. 5,292,293 to Maydan *et al.* or U.S. Patent No. 6,413,320 to Maher *et al.*

The Examiner relies upon Jeng, Maydan, or Maher for an asserted teaching of identical placement of substrates as they are moved between chambers. However, the Examiner acknowledges that none of these references disclose any apparatus having wave guides. Claims 1 and 8 recite that "for each of said plurality of plasma processing units, the position of said wave guide in relation to said transfer direction of said transfer arm is the same." The combination of references fails to teach or suggest such a feature for all the reasons set forth above. Accordingly, none of the art cited, in any

FINNEGAN
HENDERSON
FARABOW
GARRETT &
DUNNER LLP

1300 I Street, NW
Washington, DC 20005
202.408.4000
Fax 202.408.4400
www.finnegan.com

combination, renders unpatentable the invention recited in claims 1 and 8, and claims 1 and 8 are patentable over this combination of references.

Claims 2-7 depend from and add additional features to independent claim 1. Accordingly, these claims are also allowable for at least the reasons set forth above. Applicant respectfully requests that the Examiner withdraw the rejection and allow these claims.

Conclusion

In view of the foregoing amendments and remarks, Applicant respectfully requests the reconsideration and reexamination of this application and the timely allowance of the pending claims.

Please grant any extensions of time required to enter this response and charge any additional required fees to our deposit account 06-0916.

Respectfully submitted,

FINNEGAN, HENDERSON, FARABOW,
GARRETT & DUNNER, L.L.P.

By: 

Dustin T. Johnson
Reg. No. 47,684

Dated: May 9, 2003

FINNEGAN
HENDERSON
FARABOW
GARRETT &
DUNNER LLP

1300 I Street, NW
Washington, DC 20005
202.408.4000
Fax 202.408.4400
www.finnegan.com